

ABSTRACT OF THE DISCLOSURE

An optical semiconductor device and optical semiconductor integrated circuit are provided by combining, on a semiconductor substrate, materials having different refractive indices and
5 different temperature dependence of the refractive indices. In particular, it becomes possible to control the temperature dependence of the oscillation wavelength with a propagating region having a material and/or structure whose temperature dependence of the refractive index is different from that of
10 a gain region of the semiconductor laser. In addition, they can be configured to have a plurality of interfaces formed along the waveguide direction of the optical waveguide so that the light reflected off the first interface is weakened by the light reflected from the remaining interfaces. Also, they can be
15 configured with the interfaces inclined to the propagating direction so that the waveguide loss due to the reflection and refraction between the optical waveguides whose refractive indices differ from each other can be reduced.